#27

SEQUENCE LISTING

<110> Houghton, Michael
Choo, Oui-Lim
Kuo, George

<120> Hepatitis C virus protease

<130> 223002010005

<140> 09/884,456
<141> 2001-06-18

<150> 09/253,230
<151> 1999-02-19

<150> 08/709,177
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<150> 08/350,884
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<150> 07/680,296
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B19

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<210> 1
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Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser
 1               5                  10                  15
Lys Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr
            20                  25                  30
Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys
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        35                  40                  45
Asn Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr
    50                  55                  60
Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly
65                  70                  75                  80
Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met
                85                  90                  95
Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly
            100                 105                 110
Thr Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu
        115                 120                 125
Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser
    130                 135                 140
Arg Gly Ser Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser
145                 150                 155                 160
Ser Gly Gly Pro Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe
                165                 170                 175
Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile
            180                 185                 190
Pro Val Glu Asn Leu Glu Thr Thr Met Arg
        195                 200

<210> 2
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<220>
<223> HCV protease

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Cys Trp Thr Val Tyr His Gly Ala Gly
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<220>
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Asp Gln Asp Leu Gly Trp Pro Ala Pro
 1               5

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<220>
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B19 Cont

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 1   5

<210> 5
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<213> Yellow Fever virus

<220>
<223> Yellow Fever virus protease

<400> 5
Phe His Thr Met Trp His Val Thr Arg
 1   5

<210> 6
<211> 9
<212> PRT
<213> Yellow Fever virus

<220>
<223> Yellow Fever virus protease

<400> 6
Lys Glu Asp Leu Val Ala Tyr Gly Gly
 1   5

B19 Cont

<210> 7
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<213> Yellow Fever virus

<220>
<223> Yellow Fever virus protease

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Pro Ser Gly Thr Ser Gly Ser Pro Ile
 1   5

<210> 8
<211> 9
<212> PRT
<213> West Nile Fever virus

<220>
<223> West Nile Fever virus protease

<400> 8
Phe His Thr Leu Trp His Thr Thr Lys

1 5

<210> 9
<211> 9
<212> PRT
<213> West Nile Fever virus

<220>
<223> West Nile Fever virus protease

<400> 9
Lys Glu Asp Arg Leu Cys Tyr Gly Gly
1 5

<210> 10
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<212> PRT
<213> West Nile Fever virus

<220>
<223> West Nile Fever virus protease

<400> 10
Pro Thr Gly Thr Ser Gly Ser Pro Ile
1 5

<210> 11
<211> 9
<212> PRT
<213> Murray Valley virus

<220>
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B19 Cont

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Phe His Thr Leu Trp His Thr Thr Arg
1 5

<210> 12
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<220>
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Lys Glu Asp Arg Val Thr Tyr Gly Gly
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<210> 13
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<212> PRT
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<220>
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<400> 13
Pro Ile Gly Thr Ser Gly Ser Pro Ile
 1   5

<210> 14
<211> 9
<212> PRT
<213> Kunjin virus

<220>
<223> Kunjin virus protease

<400> 14
Phe His Thr Leu Trp His Thr Thr Lys
 1   5

<210> 15
<211> 9
<212> PRT
<213> Kunjin virus

<220>
<223> Kunjin virus protease

<400> 15
Lys Glu Asp Arg Leu Cys Tyr Gly Gly
 1   5

B19 Cont

<210> 16
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<212> PRT
<213> Kunjin virus

<220>
<223> Kunjin virus protease

<400> 16
Pro Thr Gly Thr Ser Gly Ser Pro Ile
 1   5

<210> 17
<211> 5
<212> PRT
<213> S. griseus A

<220>

<223> S. griseus A protease

<400> 17
Thr Ala Gly His Cys
 1   5

<210> 18
<211> 7
<212> PRT
<213> S. griseus A

<220>
<223> S. griseus A protease

<400> 18
Asn Asn Asp Tyr Gly Ile Ile
 1   5

<210> 19
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<212> PRT
<213> S. griseus A

<220>
<223> S. griseus A protease

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 1   5

<210> 20
<211> 5
<212> PRT
<213> Myxobacter 495

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<223> alpha-Lytic protease

<400> 20
Thr Ala Gly His Cys
 1   5

<210> 21
<211> 7
<212> PRT
<213> Myxobacter 495

<220>
<223> alpha-Lytic protease

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Gly Asn Asp Arg Ala Trp Val

1 5

<210> 22
<211> 7
<212> PRT
<213> Myxobacter 495

<220>
<223> alpha-Lytic protease

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1 5

<210> 23
<211> 5
<212> PRT
<213> Bovine

<220>
<223> Bovine Trypsin protease

<400> 23
Ser Ala Ala His Cys
1 5

<210> 24
<211> 7
<212> PRT
<213> Bovine

<220>
<223> Bovine Trypsin protease

B19 Cont

<400> 24
Asn Asn Asp Ile Met Leu Ile
1 5

<210> 25
<211> 7
<212> PRT
<213> Bovine

<220>
<223> Bovine Trypsin protease

<400> 25
Gly Asp Ser Gly Gly Pro Val
1 5

<210> 26
<211> 5

<212> PRT
<213> Chymotrypsin

<400> 26
Thr Ala Ala His Cys
 1   5

<210> 27
<211> 7
<212> PRT
<213> Chymotrypsin

<400> 27
Asn Asn Asp Ile Thr Leu Leu
 1   5

<210> 28
<211> 7
<212> PRT
<213> Chymotrypsin

<400> 28
Gly Asp Ser Gly Gly Pro Leu
 1   5

<210> 29
<211> 5
<212> PRT
<213> porcine

<220>
<223> Elastase protease

B19 Cont

<400> 29
Thr Ala Ala His Cys
 1   5

<210> 30
<211> 7
<212> PRT
<213> porcine

<220>
<223> Elastase protease

<400> 30
Gly Tyr Asp Ile Ala Leu Leu
 1   5

<210> 31
<211> 7
<212> PRT

<213> porcine

<220>
<223> Elastase protease

<400> 31
Gly Asp Ser Gly Gly Pro Leu
1 5

<210> 32
<211> 5
<212> PRT
<213> Hepatitis C virus

<220>
<223> HCV protease

<400> 32
Thr Val Tyr His Gly
1 5

<210> 33
<211> 7
<212> PRT
<213> Hepatitis C virus

<220>
<223> HCV protease

<400> 33
Ser Ser Asp Leu Tyr Leu Val
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B19 Cont

<210> 34
<211> 7
<212> PRT
<213> Hepatitis C virus

<220>
<223> HCV protease

<400> 34
Gly Ser Ser Gly Gly Pro Leu
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<210> 35
<211> 75
<212> PRT
<213> S. cerevisiae

<400> 35
Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu Val

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 1               5                  10                  15
Glu Ser Ser Asp Thr Ile Asp Asn Val Lys Ser Lys Ile Gln Asp Lys
            20                  25                  30
Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys Gln
        35                  40                  45
Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu Ser
    50                  55                  60
Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly
65                  70                  75
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<210> 36
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<212> PRT
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<400> 36
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Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly
 1               5                  10
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<210> 37
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<220>
<223> linker

<400> 37
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<210> 38
<211> 19
<212> DNA
<213> Artificial Sequence

B19 Cont

<220>
<223> linker

<400> 38
gatcctgaat tcctgataa 19

<210> 39
<211> 19
<212> DNA
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<220>
<223> linker

<400> 39
gacttaagga ctattttaa 19

<210> 40
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> linker

<400> 40
gatccgaatt ctgtgataa 19

<210> 41
<211> 19
<212> DNA
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<220>
<223> linker

<400> 41
gcttaagaca ctattttaa 19

<210> 42
<211> 19
<212> DNA
<213> Artificial Sequence

B19 Cont

<220>
<223> linker

<400> 42
gatcctggaa ttctgataa 19

<210> 43
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> linker

<400> 43
gaccttaaga ctattttaa 19

<210> 44
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> probe

<400> 44
atcaggaccg gggtgagaac aattaccact 30

<210> 45
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic polynucleotide

<400> 45
aagccaccgt gtgcgctagg gctcaagccc 30

<210> 46
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> probe

B19 Cont

<400> 46
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<210> 47
<211> 21
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<220>
<223> probe

<400> 47
tgcatcaatg gggtgtgctg g 21

<210> 48
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> probe

<400> 48
agagacaacc atgaggtccc cggtgttc 28

<210> 49
<211> 21
<212> DNA
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<220>
<223> probe

<400> 49
ctgttgtgcc ccgcggcagc c 21

<210> 50
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

B19 Cont

<400> 50
cccgagcaag atctcccggc cc 22

<210> 51
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 51
cccggctgca taagcagtcg acttgga 27

<210> 52
<211> 37
<212> DNA

<213> Artificial Sequence

<220>
<223> FLAG sequence

<400> 52
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<210> 53
<211> 12
<212> PRT
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<220>
<223> FLAG sequence

<400> 53
Met Asp Tyr Lys Asp Asp Asp Asp Lys Gly Arg Glu
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<210> 54
<211> 30
<212> DNA
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<220>
<223> probe

<400> 54
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<210> 55
<211> 27
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<213> Artificial Sequence

B19 Cont

<220>
<223> adapter

<400> 55
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<210> 56
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<220>
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<400> 56

tcgacttaat taattatgga attccca 27

<210> 57
<211> 22
<212> DNA
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<220>
<223> adapter

<400> 57
aatttgggaa ttccataatg ag 22

<210> 58
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> adapter

<400> 58
tcgactcatt atggaattcc ca 22

<210> 59
<211> 71
<212> DNA
<213> Artificial Sequence

<220>
<223> leader

<400> 59
aattcgtaaa tcctgtgtgc taattgaggt gcattggtct gcaaatcgag ttgctaggca 60
ataaacacat t 71

B19 cont

<210> 60
<211> 59
<212> DNA
<213> Artificial Sequence

<220>
<223> leader

<400> 60
tattgcctag caactcgatt tgcagaccaa tgcacctcaa ttagcacaca ggatttacg 59

<210> 61
<211> 62
<212> DNA

<213> Artificial Sequence

<220>
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<400> 61
tggattaatt ttaatcgttc gttgagcgat tagcagagaa ctgaccagaa catgtctgag 60
ct 62

<210> 62
<211> 66
<212> DNA
<213> Artificial Sequence

<220>
<223> leader

<400> 62
cagacatgtt ctggtcagtt ctctgctaat cgctcaacga acgattaaaa ttaatccaaa 60
tgtgtt 66

<210> 63
<211> 11
<212> PRT
<213> Hepatitis C virus

<400> 63
Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr
1 5 10

<210> 64
<211> 9
<212> PRT
<213> Hepatitis C virus

B19 Cont

<400> 64
Leu Lys Gly Ser Ser Gly Gly Pro Leu
1 5

<210> 65
<211> 202
<212> PRT
<213> Hepatitis C virus

<400> 65
Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser
1 5 10 15
Lys Gly Trp Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr
20 25 30
Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys

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        35                  40                  45
Asn Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr
    50                  55                  60
Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly
65                  70                  75                  80
Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met
                85                  90                  95
Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly
            100                 105                 110
Thr Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu
        115                 120                 125
Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser
    130                 135                 140
Arg Gly Ser Leu Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser
145                 150                 155                 160
Ser Gly Gly Pro Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe
                165                 170                 175
Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile
            180                 185                 190
Pro Val Glu Asn Leu Glu Thr Thr Met Arg
        195                 200
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<210> 66
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<212> PRT
<213> Hepatitis C virus

<400> 66

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 1               5                  10                  15
Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe Ser
            20                  25                  30
Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
        35                  40                  45
Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
    50                  55                  60
Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu
65                  70                  75                  80
Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
                85                  90                  95
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
            100                 105                 110
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
        115                 120                 125
Ile Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
    130                 135                 140
Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
145                 150                 155                 160
Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu
                165                 170                 175
Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
            180                 185                 190
```

B19 Cont

```
Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
        195                 200                 205
Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
    210                 215                 220
Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val
225                 230                 235                 240
Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
                245                 250                 255
Leu Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro
            260                 265                 270
Pro Val Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr
        275                 280                 285
Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala
    290                 295
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<210> 67
<211> 199
<212> PRT
<213> Hepatitis C virus

<400> 67

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Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala His
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Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe Ser
            20                  25                  30
Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
        35                  40                  45
Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
    50                  55                  60
Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu
65                  70                  75                  80
Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
                85                  90                  95
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
            100                 105                 110
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
        115                 120                 125
Ile Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
    130                 135                 140
Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
145                 150                 155                 160
Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu
                165                 170                 175
Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
            180                 185                 190
Ala Asp Val Ile Pro Val Arg
        195
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<210> 68
<211> 299
<212> PRT
<213> Hepatitis C virus

<400> 68

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Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala His
 1               5                  10                  15
Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe Ser
            20                  25                  30
Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
        35                  40                  45
Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
    50                  55                  60
Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu
65                  70                  75                  80
Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
                85                  90                  95
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
            100                 105                 110
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
        115                 120                 125
Ile Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
    130                 135                 140
Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
145                 150                 155                 160
Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu
                165                 170                 175
Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
            180                 185                 190
Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
        195                 200                 205
Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
    210                 215                 220
Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val
225                 230                 235                 240
Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
                245                 250                 255
Leu Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro
            260                 265                 270
Pro Val Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr
        275                 280                 285
Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala
    290                 295
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B19 cont

<210> 69
<211> 2064
<212> DNA
<213> Hepatitis C virus

<400> 69

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atcacgtggg gggcagatac cgccgcgtgc ggtgacatca tcaacggctt gcctgtttcc     180
gcccgcaggg gccgggagat actgctcggg ccagccgatg gaatggtctc caagggttgg     240
aggttgctgg cgcccatcac ggcgtacgcc cagcagacaa ggggcctcct agggtgcata     300
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atcaccagcc taactggccg ggacaaaaac caagtggagg gtgaggtcca gattgtgtca     360
actgctgccc aaaccttcct ggcaacgtgc atcatcaatg gggtgtgctg gactgtctac     420
cacggggccg gaacgaggac catcgcgtca cccaagggtc ctgtcatcca gatgtatacc     480
aatgtagacc aagaccttgt gggctggccc gcttcgcaag gtacccgctc attgacaccc     540
tgcacttgcg gctcctcgga cctttacctg gtcacgaggc acgccgatgt cattcccgtg     600
cgccggcggg gtgatagcag gggcagcctg ctgtcgcccc ggcccatttc ctacttgaaa     660
ggctcctcgg ggggtccgct gttgtgcccc gcggggcacg ccgtgggcat atttagggcc     720
gcggtgtgca cccgtggagt ggctaaggcg gtggacttta tccctgtgga gaacctagag     780
acaaccatga ggtccccggt gttcacggat aactcctctc caccagtagt gccccagagc     840
ttccaggtgg ctcacctcca tgctcccaca ggcagcggca aaagcaccaa ggtcccggct     900
gcatatgcag ctcagggcta taaggtgcta gtactcaacc cctctgttgc tgcaacactg     960
ggctttggtg cttacatgtc caaggctcat gggatcgatc ctaacatcag gaccggggtg    1020
agaacaatta ccactggcag ccccatcacg tactccacct acggcaagtt ccttgccgac    1080
ggcgggtgct cgggggggcgc ttatgacata ataatttgtg acgagtgcca ctccacggat    1140
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ctggttgtgc tcgccaccgc caccctccg ggctccgtca ctgtgcccca tcccaacatc    1260
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gaagtaatca agggggggag acatctcatc ttctgtcatt caaagaagaa gtgcgacgaa    1380
ctcgccgcaa agctggtcgc attgggcatc aatgccgtgg cctactaccg cggtcttgac    1440
gtgtccgtca tcccgaccag cggcgatgtt gtcgtcgtgg caaccgatgc cctcatgacc    1500
ggctataccg gcgacttcga ctcggtgata gactgcaata cgtgtgtcac ccagacagtc    1560
gatttcagcc ttgaccctac cttcaccatt gagacaatca cgctccccca agatgctgtc    1620
tcccgcactc aacgtcgggg caggactggc agggggaagc caggcatcta cagatttgtg    1680
gcaccggggg agcgccctcc cggcatgttc gactcgtccg tcctctgtga gtgctatgac    1740
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atgaacaccc cggggcttcc cgtgtgccag gaccatcttg aattttggga gggcgtcttt    1860
acaggcctca ctcatataga tgcccacttt ctatcccaga caaagcagag tggggagaac    1920
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tcgtgggacc agatgtggaa gtgtttgatt cgcctcaagc ccaccctcca tgggccaaca    2040
cccctgctat acagactggg cgct                                          2064
```

<210> 70
<211> 686
<212> PRT
<213> Hepatitis C virus

B19 Cont

<400> 70

```
Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp Ala His
 1               5                  10                  15
Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val Phe Ser
            20                  25                  30
Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys
        35                  40                  45
Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu
    50                  55                  60
Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu
65                  70                  75                  80
Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly
                85                  90                  95
Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly
            100                 105                 110
Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys
```

```
        115                 120                 125
Ile Ile Asn Gly Val Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg
    130                 135                 140
Thr Ile Ala Ser Pro Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val
145                 150                 155                 160
Asp Gln Asp Leu Val Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu
                165                 170                 175
Thr Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His
            180                 185                 190
Ala Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu
        195                 200                 205
Leu Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro
    210                 215                 220
Leu Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val
225                 230                 235                 240
Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn
                245                 250                 255
Leu Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro
            260                 265                 270
Pro Val Val Pro Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr
        275                 280                 285
Gly Ser Gly Lys Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly
    290                 295                 300
Tyr Lys Val Leu Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe
305                 310                 315                 320
Gly Ala Tyr Met Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr
                325                 330                 335
Gly Val Arg Thr Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr
            340                 345                 350
Gly Lys Phe Leu Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile
        355                 360                 365
Ile Ile Cys Asp Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly
    370                 375                 380
Ile Gly Thr Val Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val
385                 390                 395                 400
Val Leu Ala Thr Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro
                405                 410                 415
Asn Ile Glu Glu Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr
            420                 425                 430
Gly Lys Ala Ile Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile
        435                 440                 445
Phe Cys His Ser Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val
    450                 455                 460
Ala Leu Gly Ile Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser
465                 470                 475                 480
Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu
                485                 490                 495
Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr
            500                 505                 510
Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile
        515                 520                 525
Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg
```

B19 Cont

```
    530                 535                 540
Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro
545                 550                 555                 560
Gly Glu Arg Pro Pro Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys
                565                 570                 575
Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr
            580                 585                 590
Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln
        595                 600                 605
Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile
    610                 615                 620
Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro
625                 630                 635                 640
Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro
                645                 650                 655
Pro Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile Arg Leu Lys Pro
            660                 665                 670
Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala
        675                 680                 685
```

<210> 71
<211> 368
<212> DNA
<213> Hepatitis C virus

<400> 71

```
aattcggaaa accaagtgga gggtgaggtc cagattgtgt caactgctgc ccaaaccttc      60
ctggcaacgt gcatcaatgg ggtgtgctgg actgtctacc acggggccgg aacgaggacc     120
atcgcgtcac ccaagggtcc tgtcatccag atgtatacca atgtagacca agaccttgtg     180
ggctggcccg cttcgcaagg tacccgctca ttgacaccct gcacttgcgg ctcctcggac     240
ctttacctgg tcacgaggca cgccgatgtc attcccgtgc gccggcgggg tgatagcagg     300
ggcagcctcg tgtcgccccg gcccatttcc tacttgaaag gctcctcggg gggtccgctg     360
ccgaattc                                                              368
```

<210> 72
<211> 122
<212> PRT
<213> Hepatitis C virus

<400> 72

```
Asn Ser Glu Asn Gln Val Glu Gly Glu Val Gln Ile Val Ser Thr Ala
 1               5                  10                  15
Ala Gln Thr Phe Leu Ala Thr Cys Ile Asn Gly Val Cys Trp Thr Val
            20                  25                  30
Tyr His Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro Lys Gly Pro Val
        35                  40                  45
Ile Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val Gly Trp Pro Ala
    50                  55                  60
Ser Gln Gly Thr Arg Ser Leu Thr Pro Cys Thr Cys Gly Ser Ser Asp
65                  70                  75                  80
Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro Val Arg Arg Arg
                85                  90                  95
```

```
Gly Asp Ser Arg Gly Ser Leu Val Ser Pro Arg Pro Ile Ser Tyr Leu
            100                 105                 110
Lys Gly Ser Ser Gly Gly Pro Leu Pro Asn
        115                 120
```

<210> 73
<211> 208
<212> DNA
<213> Hepatitis C virus

<400> 73
gaattcgggg gcctgctgtt gtgccccgcg gcagccgtgg gcatatttag ggccgcggtg 60
tgcacccgtg gagtggctaa ggcggtggac tttatccctg tggagaacct agagacaacc 120
atgaggtccc cggtgttcac ggataactcc tctccaccag tagtgcccca gagcttccag 180
gtggctcacc tccatgctcc ccgaattc 208

<210> 74
<211> 69
<212> PRT
<213> Hepatitis C virus

<400> 74
```
Glu Phe Gly Gly Leu Leu Leu Cys Pro Ala Ala Ala Val Gly Ile Phe
 1               5                  10                  15
Arg Ala Ala Val Cys Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile
            20                  25                  30
Pro Val Glu Asn Leu Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp
        35                  40                  45
Asn Ser Ser Pro Pro Val Val Pro Gln Ser Phe Gln Val Ala His Leu
    50                  55                  60
His Ala Pro Arg Ile
65
```

<210> 75
<211> 281
<212> DNA
<213> Hepatitis C virus

B19 Cont

<400> 75
ccctgcactt gcggctcctc ggacctttac ctggtcacga ggcacgccga tgtcattccc 60
gtgcgccggc ggggtgatag caggggcagc ctgctgtcgc cccggcccat ttcctacttg 120
aaaggctcct cgggggtcc gctgttgtgc cccgcggggc acgccgtggg catatttagg 180
gccgcggtgt gcacccgtgg agtggctaag gcggtggact ttatccctgt ggagaaccta 240
gagacaacca tgaggtcccc ggtgttcacg gataactcct c 281

<210> 76
<211> 93
<212> PRT
<213> Hepatitis C virus

<400> 76
Pro Cys Thr Cys Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala

```
 1               5                  10                  15
Asp Val Ile Pro Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu
            20                  25                  30
Ser Pro Arg Pro Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu
        35                  40                  45
Leu Cys Pro Ala Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys
    50                  55                  60
Thr Arg Gly Val Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu
65                  70                  75                  80
Glu Thr Thr Met Arg Ser Pro Val Phe Thr Asp Asn Ser
                85                  90
```

<210> 77
<211> 416
<212> DNA
<213> Hepatitis C virus

<400> 77

```
attcggggca cctatgttta taaccatctc actcctcttc gggactgggc gcacaacggc      60
ttgcgagatc tggccgtggc tgtagagcca gtcgtcttct cccaaatgga gaccaagctc     120
atcacgtggg gggcagatac cgccgcgtgc ggtgacatca tcaacggctt gcctgtttcc     180
gcccgcaggg gccgggagat actgctcggg ccagccgatg gaatggtctc caagggttgg     240
aggttgctgg cgcccatcac ggcgtacgcc cagcagacaa ggggcctcct agggtgcata     300
atcaccagcc taactggccg ggacaaaaac caagtggagg gtgaggtcca gattgtgtca     360
actgctgccc aaaccttcct ggcaacgtgc atcaatgggg tgtgctggcc gaattc         416
```

<210> 78
<211> 138
<212> PRT
<213> Hepatitis C virus

<400> 78

```
Ile Arg Gly Thr Tyr Val Tyr Asn His Leu Thr Pro Leu Arg Asp Trp
 1               5                  10                  15
Ala His Asn Gly Leu Arg Asp Leu Ala Val Ala Val Glu Pro Val Val
            20                  25                  30
Phe Ser Gln Met Glu Thr Lys Leu Ile Thr Trp Gly Ala Asp Thr Ala
        35                  40                  45
Ala Cys Gly Asp Ile Ile Asn Gly Leu Pro Val Ser Ala Arg Arg Gly
    50                  55                  60
Arg Glu Ile Leu Leu Gly Pro Ala Asp Gly Met Val Ser Lys Gly Trp
65                  70                  75                  80
Arg Leu Leu Ala Pro Ile Thr Ala Tyr Ala Gln Gln Thr Arg Gly Leu
                85                  90                  95
Leu Gly Cys Ile Ile Thr Ser Leu Thr Gly Arg Asp Lys Asn Gln Val
            100                 105                 110
Glu Gly Glu Val Gln Ile Val Ser Thr Ala Ala Gln Thr Phe Leu Ala
        115                 120                 125
Thr Cys Ile Asn Gly Val Cys Trp Pro Asn
    130                 135
```

3/19 cont

<210> 79

<211> 308
<212> DNA
<213> Hepatitis C virus

<400> 79
gaattcgggt ccgtcatccc gaccagcggc gatgttgtcg tcgtcgcaac cgatgccctc 60
atgaccggct ataccggcga cttcgactcg gtgatagact gcaatacgtg tgtcacccag 120
acagtcgatt tcagccttga ccctaccttc accattgaga caatcacgct cccccaagat 180
gctgtctccc gcactcaacg tcggggcagg actggcaggg ggaagccagg catctacaga 240
tttgtggcac cgggggagcg cccctccggc atgttcgact cgtccgtcct ctgtgagtgc 300
ccgaattc 308

<210> 80
<211> 102
<212> PRT
<213> Hepatitis C virus

<400> 80
Glu Phe Gly Ser Val Ile Pro Thr Ser Gly Asp Val Val Val Val Ala
1 5 10 15
Thr Asp Ala Leu Met Thr Gly Tyr Thr Gly Asp Phe Asp Ser Val Ile
20 25 30
Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro
35 40 45
Thr Phe Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg
50 55 60
Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg
65 70 75 80
Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val
85 90 95
Leu Cys Glu Cys Pro Asn
100

<210> 81
<211> 495
<212> DNA
<213> Hepatitis C virus

<400> 81
attcggtcca ttgagacaat cacgctcccc caggatgctg tctcccgcac tcaacgtcgg 60
ggcaggactg gcaggggaa gccaggcatc tacagatttg tggcaccggg ggagcgcccc 120
tccggcatgt tcgactcgtc cgtcctctgt gagtgctatg acgcaggctg tgcttggtat 180
gagctcacgc ccgccgagac tacagttagg ctacgagcgt acatgaacac cccggggctt 240
cccgtgtgcc aggaccatct tgaattttgg gagggcgtct ttacaggcct cactcatata 300
gatgcccact ttctatccca gacaaagcag agtggggaga accttcctta cctggtagcg 360
taccaagcca ccgtgtgcgc tagggctcaa gcccctcccc catcgtggga ccagatgtgg 420
aagtgtttga ttcgcctcaa gcccaccctc catgggccaa caccctgct atacagactg 480
ggcgctgccg aattc 495

<210> 82
<211> 165
<212> PRT

<213> Hepatitis C virus

<400> 82

```
Ile Arg Ser Ile Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg
 1               5                  10                  15
Thr Gln Arg Arg Gly Arg Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg
            20                  25                  30
Phe Val Ala Pro Gly Glu Arg Pro Ser Gly Met Phe Asp Ser Ser Val
        35                  40                  45
Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu Thr Pro
    50                  55                  60
Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu
65                  70                  75                  80
Pro Val Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly
                85                  90                  95
Leu Thr His Ile Asp Ala His Phe Leu Ser Gln Thr Lys Gln Ser Gly
            100                 105                 110
Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln Ala Thr Val Cys Ala Arg
        115                 120                 125
Ala Gln Ala Pro Pro Pro Ser Trp Asp Gln Met Trp Lys Cys Leu Ile
    130                 135                 140
Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu
145                 150                 155                 160
Gly Ala Ala Glu Phe
                165
```

<210> 83
<211> 816
<212> DNA
<213> Hepatitis C virus

<400> 83

```
gaattcgggg cggtggactt tatccctgtg gagaacctag agacaaccat gaggtccccg      60
gtgttcacgg ataactcctc tccaccagta gtgccccaga gcttccaggt ggctcacctc     120
catgctccca caggcagcgg caaaagcacc aaggtcccgg ctgcatatgc agctcagggc     180
tataaggtgc tagtactcaa cccctctgtt gctgcaacac tgggctttgg tgcttacatg     240
tccaaggctc atgggatcga tcctaacatc aggaccgggg tgagaacaat taccactggc     300
agccccatca cgtactccac ctacggcaag ttccttgccg acggcgggtg ctcgggggggc     360
gcttatgaca taataatttg tgacgagtgc cactccacgg atgccacatc catcttgggc     420
attggcactg tccttgacca agcagagact gcgggggcga gactggttgt gctcgccacc     480
gccacccctc cgggctccgt cactgtgccc catcccaaca tcgaggaggt tgctctgtcc     540
accaccggag agatcccttt ttacggcaag gctatccccc tcgaagtaat caaggggggg     600
agacatctca tcttctgtca ttcaaagaag aagtgcgacg aactcgccgc aaagctggtc     660
gcattgggca tcaatgccgt ggcctactac cgcggtcttg acgtgtccgt catcccgacc     720
agcggcgatg ttgtcgtcgt ggcaaccgat gccctcatga ccggctatac cggcgacttc     780
gactcggtga tagactgcaa tacgtgtgcc gaattc                               816
```

<210> 84
<211> 272
<212> PRT
<213> Hepatitis C virus

<400> 84

```
Glu Phe Gly Ala Val Asp Phe Ile Pro Val Glu Asn Leu Glu Thr Thr
 1               5                  10                  15
Met Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Val Val Pro
            20                  25                  30
Gln Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys
        35                  40                  45
Ser Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu
    50                  55                  60
Val Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met
65                  70                  75                  80
Ser Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr
                85                  90                  95
Ile Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu
            100                 105                 110
Ala Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp
        115                 120                 125
Glu Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val
    130                 135                 140
Leu Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr
145                 150                 155                 160
Ala Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu
                165                 170                 175
Val Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile
            180                 185                 190
Pro Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser
        195                 200                 205
Lys Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile
    210                 215                 220
Asn Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr
225                 230                 235                 240
Ser Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr
                245                 250                 255
Thr Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Ala Glu Phe
            260                 265                 270
```

B19 Cont

<210> 85
<211> 2523
<212> DNA
<213> Artificial Sequence

<220>
<223> vector cf1SODp600

<400> 85

```
atggctacaa accctgtttg cgttttgaag ggtgacggcc cagttcaagg tattattaac      60
ttcgagcaga aggaaagtaa tggaccagtg aaggtgtggg gaagcattaa aggactgact     120
gaaggcctgc atggattcca tgttcatgag tttggagata atacagcagg ctgtaccagt     180
ccaggtcctc actttaatcc tctatccaga aaacacggtg ggccaaagga tgaagagagg     240
catgttggag acttgggcaa tgtgactgct gacaaagatg gtgtggccga tgtgtctatt     300
gaagattctg tgatctcact ctcaggagac cattgcatca ttggccgcac actggtggtc     360
catgaaaaag cagatgactt gggcaaaggt ggaaatgaag aaagtacaaa gacaggaaac     420
```

```
gctggaagtc gtttggcttg tggtgtaatt gggatccgaa ttcggggcac ctatgtttat     480
aaccatctca ctcctcttcg ggactgggcg cacaacggct tgcgagatct ggccgtggct     540
gtagagccag tcgtcttctc ccaaatggag accaagctca tcacgtgggg ggcagatacc     600
gccgcgtgcg gtgacatcat caacggcttg cctgtttccg cccgcagggg ccgggagata     660
ctgctcgggc cagccgatgg aatggtgtcc aagggttgga ggttgctggc gcccatcacg     720
gcgtacgccc agcagacaag gggcctccta gggtgcataa tcaccagcct aactggccgg     780
gacaaaaacc aagtggaggg tgaggtccag attgtgtcaa ctgctgccca aaccttcctg     840
gcaacgtgca tcatcaatgg ggtgtgctgg actgtctacc acggggccgg aacgaggacc     900
atcgcgtcac ccaagggtcc tgtcatccag atgtatacca atgtagacca agaccttgtg     960
ggctggcccg cttcgcaagg tacccgctca ttgacaccct gcacttgcgg ctcctcggac    1020
ctttacctgg tcacgaggca cgccgatgtc attcccgtgc gccggcgggg tgatagcagg    1080
ggcagcctgc tgtcgccccg gcccatttcc tacttgaaag gctcctcggg gggtccgctg    1140
ttgtgccccg cggggcacgc cgtgggcata tttagggccg cggtgtgcac ccgtggagtg    1200
gctaaggcgg tggactttat ccctgtggag aacctagaga caaccatgag gtccccggtg    1260
ttcacggata actcctctcc accagtagtg ccccagagct tccaggtggc tcacctccat    1320
gctcccacag gcagcggcaa aagcaccaag gtcccggctg catatgcagc tcagggctat    1380
aaggtgctag tactcaaccc ctctgttgct gcaacactgg gctttggtgc ttacatgtcc    1440
aaggctcatg ggatcgatcc taacatcagg accggggtga gaacaattac cactggcagc    1500
cccatcacgt actccaccta cggcaagttc cttgccgacg gcgggtgctc ggggggcgct    1560
tatgacataa taatttgtga cgagtgccac tccacggatg ccacatccat cttgggcatt    1620
ggcactgtcc ttgaccaagc agagactgcg ggggcgagac tggttgtgct cgccaccgcc    1680
acccctccgg gctccgtcac tgtgccccat cccaacatcg aggaggttgc tctgtccacc    1740
accggagaga tccctttta cggcaaggct atccccctcg aagtaatcaa ggggggggaga    1800
catctcatct tctgtcattc aaagaagaag tgcgacgaac tcgccgcaaa gctggtcgca    1860
ttgggcatca atgccgtggc ctactaccgc ggtcttgacg tgtccgtcat cccgaccagc    1920
ggcgatgttg tcgtcgtggc aaccgatgcc ctcatgaccg gctataccgg cgacttcgac    1980
tcggtgatag actgcaatac gtgtgtcacc cagacagtcg atttcagcct tgaccctacc    2040
ttcaccattg agacaatcac gctcccccaa gatgctgtct cccgcactca acgtcggggc    2100
aggactggca gggggaagcc aggcatctac agatttgtgg caccgggggga gcgccctccc    2160
ggcatgttcg actcgtccgt cctctgtgag tgctatgacg caggctgtgc ttggtatgag    2220
ctcacgcccg ccgagactac agttaggcta cgagcgtaca tgaacacccc ggggcttccc    2280
gtgtgccagg accatcttga attttgggag ggcgtcttta caggcctcac tcatatagat    2340
gcccactttc tatcccagac aaagcagagt ggggagaacc ttccttacct ggtagcgtac    2400
caagccaccg tgtgcgctag ggctcaagcc cctcccccat cgtgggacca gatgtggaag    2460
tgtttgattc gcctcaagcc caccctccat gggccaacac ccctgctata cagactgggc    2520
gct                                                                  2523
```


<210> 86
<211> 841
<212> PRT
<213> Artificial Sequence

<220>
<223> vector cf1SODp600

<400> 86

```
Met Ala Thr Asn Pro Val Cys Val Leu Lys Gly Asp Gly Pro Val Gln
 1               5                  10                  15
Gly Ile Ile Asn Phe Glu Gln Lys Glu Ser Asn Gly Pro Val Lys Val
            20                  25                  30
Trp Gly Ser Ile Lys Gly Leu Thr Glu Gly Leu His Gly Phe His Val
        35                  40                  45
```

```
His Glu Phe Gly Asp Asn Thr Ala Gly Cys Thr Ser Pro Gly Pro His
    50                  55                  60
Phe Asn Pro Leu Ser Arg Lys His Gly Gly Pro Lys Asp Glu Glu Arg
65                  70                  75                  80
His Val Gly Asp Leu Gly Asn Val Thr Ala Asp Lys Asp Gly Val Ala
                85                  90                  95
Asp Val Ser Ile Glu Asp Ser Val Ile Ser Leu Ser Gly Asp His Cys
            100                 105                 110
Ile Ile Gly Arg Thr Leu Val Val His Glu Lys Ala Asp Asp Leu Gly
        115                 120                 125
Lys Gly Gly Asn Glu Glu Ser Thr Lys Thr Gly Asn Ala Gly Ser Arg
    130                 135                 140
Leu Ala Cys Gly Val Ile Gly Ile Arg Ile Arg Gly Thr Tyr Val Tyr
145                 150                 155                 160
Asn His Leu Thr Pro Leu Arg Asp Trp Ala His Asn Gly Leu Arg Asp
                165                 170                 175
Leu Ala Val Ala Val Glu Pro Val Val Phe Ser Gln Met Glu Thr Lys
            180                 185                 190
Leu Ile Thr Trp Gly Ala Asp Thr Ala Ala Cys Gly Asp Ile Ile Asn
        195                 200                 205
Gly Leu Pro Val Ser Ala Arg Arg Gly Arg Glu Ile Leu Leu Gly Pro
    210                 215                 220
Ala Asp Gly Met Val Ser Lys Gly Trp Arg Leu Leu Ala Pro Ile Thr
225                 230                 235                 240
Ala Tyr Ala Gln Gln Thr Arg Gly Leu Leu Gly Cys Ile Ile Thr Ser
                245                 250                 255
Leu Thr Gly Arg Asp Lys Asn Gln Val Glu Gly Glu Val Gln Ile Val
            260                 265                 270
Ser Thr Ala Ala Gln Thr Phe Leu Ala Thr Cys Ile Ile Asn Gly Val
        275                 280                 285
Cys Trp Thr Val Tyr His Gly Ala Gly Thr Arg Thr Ile Ala Ser Pro
    290                 295                 300
Lys Gly Pro Val Ile Gln Met Tyr Thr Asn Val Asp Gln Asp Leu Val
305                 310                 315                 320
Gly Trp Pro Ala Ser Gln Gly Thr Arg Ser Leu Thr Pro Cys Thr Cys
                325                 330                 335
Gly Ser Ser Asp Leu Tyr Leu Val Thr Arg His Ala Asp Val Ile Pro
            340                 345                 350
Val Arg Arg Arg Gly Asp Ser Arg Gly Ser Leu Leu Ser Pro Arg Pro
        355                 360                 365
Ile Ser Tyr Leu Lys Gly Ser Ser Gly Gly Pro Leu Leu Cys Pro Ala
    370                 375                 380
Gly His Ala Val Gly Ile Phe Arg Ala Ala Val Cys Thr Arg Gly Val
385                 390                 395                 400
Ala Lys Ala Val Asp Phe Ile Pro Val Glu Asn Leu Glu Thr Thr Met
                405                 410                 415
Arg Ser Pro Val Phe Thr Asp Asn Ser Ser Pro Pro Val Val Pro Gln
            420                 425                 430
Ser Phe Gln Val Ala His Leu His Ala Pro Thr Gly Ser Gly Lys Ser
        435                 440                 445
Thr Lys Val Pro Ala Ala Tyr Ala Ala Gln Gly Tyr Lys Val Leu Val
    450                 455                 460
```

```
Leu Asn Pro Ser Val Ala Ala Thr Leu Gly Phe Gly Ala Tyr Met Ser
465                 470                 475                 480
Lys Ala His Gly Ile Asp Pro Asn Ile Arg Thr Gly Val Arg Thr Ile
                485                 490                 495
Thr Thr Gly Ser Pro Ile Thr Tyr Ser Thr Tyr Gly Lys Phe Leu Ala
            500                 505                 510
Asp Gly Gly Cys Ser Gly Gly Ala Tyr Asp Ile Ile Ile Cys Asp Glu
        515                 520                 525
Cys His Ser Thr Asp Ala Thr Ser Ile Leu Gly Ile Gly Thr Val Leu
    530                 535                 540
Asp Gln Ala Glu Thr Ala Gly Ala Arg Leu Val Val Leu Ala Thr Ala
545                 550                 555                 560
Thr Pro Pro Gly Ser Val Thr Val Pro His Pro Asn Ile Glu Glu Val
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Ala Leu Ser Thr Thr Gly Glu Ile Pro Phe Tyr Gly Lys Ala Ile Pro
            580                 585                 590
Leu Glu Val Ile Lys Gly Gly Arg His Leu Ile Phe Cys His Ser Lys
        595                 600                 605
Lys Lys Cys Asp Glu Leu Ala Ala Lys Leu Val Ala Leu Gly Ile Asn
    610                 615                 620
Ala Val Ala Tyr Tyr Arg Gly Leu Asp Val Ser Val Ile Pro Thr Ser
625                 630                 635                 640
Gly Asp Val Val Val Val Ala Thr Asp Ala Leu Met Thr Gly Tyr Thr
                645                 650                 655
Gly Asp Phe Asp Ser Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr
            660                 665                 670
Val Asp Phe Ser Leu Asp Pro Thr Phe Thr Ile Glu Thr Ile Thr Leu
        675                 680                 685
Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg Thr Gly Arg
    690                 695                 700
Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Pro
705                 710                 715                 720
Gly Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys
                725                 730                 735
Ala Trp Tyr Glu Leu Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala
            740                 745                 750
Tyr Met Asn Thr Pro Gly Leu Pro Val Cys Gln Asp His Leu Glu Phe
        755                 760                 765
Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala His Phe Leu
    770                 775                 780
Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr
785                 790                 795                 800
Gln Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Pro Ser Trp Asp
                805                 810                 815
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